

LUCANUS ELAPHUS (COLEOPTERA: LUCANIDAE) DISCOVERED IN NEBRASKA, WITH BRIEF NOTES ON ITS BIOLOGY AND IDENTIFICATION¹

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ABSTRACT: *Lucanus elaphus*, a species of stag beetle found in the eastern United States, is recorded from Nebraska for the first time. Its discovery in the southeastern part of the state is a substantial westward range extension. Brief commentary is provided on its biology and identification.

The lucanids, or stag beetles, occur worldwide and consist of just over 800 species. They have been treated in comprehensive checklists by Benesh (1960) and Maes (1992) and in illustrated catalogs by Didier and Seguy (1953) and Mizunuma and Nagai (1994). The latter book is spectacular for its colored plates of the world fauna. There are about 25 species in eight genera in the United States (Ratcliffe, in press). Five species of Lucanidae occur in Nebraska, and these were comprehensively reviewed by Ratcliffe (1991). All of the Nebraska species are near the westernmost limit of their geographic ranges. *Lucanus elaphus* Fabr. was not included in this work because it was not then known to occur in Nebraska.

Lucanids are usually found in decaying stumps and logs in deciduous and coniferous habitats. Adults of some species are attracted to lights at night, and some feed on sap flows from fluxing trees. Their eggs are usually laid in crevices in bark or logs, and the larvae feed on decaying wood. The larvae resemble those of scarab beetles, but in lucanids the anal opening is longitudinal or Y-shaped whereas in scarabs it is usually transverse or rarely Y-shaped.

A prairie state like Nebraska is not usually considered as having suitable habitat for stag beetles because they are customarily associated with eastern deciduous forests. Most of the species in Nebraska are found in the southeastern part of the state where oak/hickory forests are found, usually as gallery forests (occasionally extensive) along rivers and streams.

There is also a lack of collecting in many parts of the state, and our lack of knowledge of what species occur in Nebraska is even more pronounced for species like stag beetles that are usually encountered only at lights or in rotted stumps or logs where they live.

The elephant stag beetle, *Lucanus elaphus* Fabr., is found in the eastern United States. Females are rarely collected. Its closest occurrence to Ne-

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braska seems to be in Indiana, Arkansas, and Oklahoma (Downie and Arnett 1996; Blackwelder and Arnett 1974). We report here a NEW STATE RECORD represented by two male specimens. The locality data are:

NE: Richardson Co., 1 mi W, 1 mi N Barada, VIII-1-2000, at lights, J. Georges collector, and NE: Richardson Co., Indian Cave State Park, VIII-6-1999, found dead, G. Birch collector.

Richardson County is in the southeastern corner of the state, and it has extensive tracts of eastern deciduous forest where this species would be most likely to occur. Nevertheless, the discovery of this species in Nebraska is a surprising westward range extension.

Lucanus elaphus is the largest stag beetle in North America. It is most easily distinguished from its congeners (*L. capreolus* (L.) and *L. placidus* Say in Nebraska) by its usually larger size (31-62 mm), males with the head much wider than the pronotum and with a distinct, ridge-like crest above and behind the eyes, males with the mandibles long and widely forked at the apex (Fig. 1), and females with the mentum quadrate (especially on the anterior angles).

The 1999 specimen is deposited as a voucher specimen in the Systematics Research Collections of the University of Nebraska State Museum.



Fig. 1. *Lucanus elaphus* male collected in Richardson Co., Nebraska in August 2000.

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SOCIETY MEETING OF OCTOBER 24, 2001
**Insect Pheromones: Biological Implications
and Pest Management Applications**

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Dr. Evenden began by introducing some of the vocabulary used to discuss chemically-mediated interactions between organisms. She then discussed sex pheromone production, perception and response in moths. This included discussion about the synthesis of female-produced signals and the neurophysiology resulting in the behavioral response of males. She further outlined some of the tools and techniques that are commonly used in chemical ecology research, including gas chromatographic-electroantennographic detection, wind tunnel bioassays and pheromone dispenser technology. The remainder of the seminar focused on how semiochemicals could be exploited for use in pest management. Dr. Evenden detailed two non-lepidopteran examples of semiochemical-based management for the Mountain Pine Beetle, *Dendroctonus ponderosae* and honey bee colony maintenance. Dr. Evenden then presented her own research on the development of several semiochemical-based pest management tactics against Lepidopteran pests. Research leading to the development of a monitoring technique for the western hemlock looper, *Lambdina fiscellaria lugubrosa* was presented. Dr. Evenden outlined some of her doctoral dissertation work which investigated the mechanisms of mating disruption against the obliquebanded leafroller, *Choristoneura rosaceana*. Finally, Dr. Evenden outlined some of the limitations to pheromone-based mating disruption and described her research into the possibility for the evolution of resistance to pheromone-based mating disruption tested in two pheromone strains of the cabbage looper moth, *Trichoplusia ni*. After the formal presentation of the seminar, there were several interesting questions from the audience.

In notes of entomological interest, Dr. Susan Whitney reported that she has received numerous calls from area residents who have mistaken citronella ants' mating flights for termite swarms. The corresponding secretary reported a cautionary observation of large numbers of *Harmonia axiridis* ladybird beetles stuck to a freshly painted exterior door.

William J. Cromartie
Corresponding Secretary